Scoliosis

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Oral presentation

Test-retest standard error of measurements for full-torso surface topography parameters in healthy teenagers

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Objectives

To assess the test-retest standard error of measurement (SEM) of full-torso surface topography (ST) parameters in adolescents without spinal deformities.

Background

ST is used to quantify the external deformity of the torso due to scoliosis. A normative ST database is being developed to help interpret the ST parameters used to describe scoliosis. Test-retest SEM has not been estimated for most parameters in this population.

Methods

Twenty-two healthy volunteers between 10-17 years old, with a body mass index of 19.1 ± 3.3 kg/m2, scoliometer measure of 3.6° ± 2.5°, and without pain were included. Four Minolta 910 Laser Scanners and a standard positioning frame were used to record ST scans. One evaluator positioned all subjects, marked 11 reference points, and scanned. Immediately after, reference points were erased, landmarking and scanning repeated. ST parameters were extracted with custom designed software in Matlab by one evaluator digitizing reference points. Nineteen previously published and 7 newly proposed ST parameters were extracted. Test-retest standard error of measurement was calculated for each parameter. SEM was estimated for the minimum, maximum and the range of within-subject values for parameters extracted. SEM < 4 mm, < 5° or < 0.2 for a ratio were considered adequate based on values in patients with scoliosis. (Figure 1)

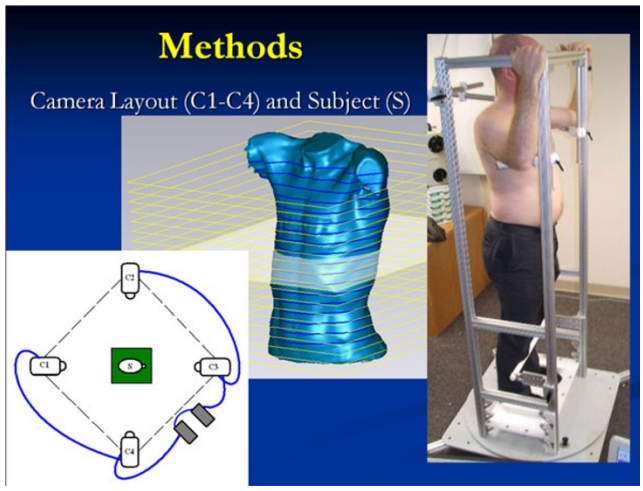

Figure 1

Conclusion

Test-retest SEM of 15 of 26 ST parameters in healthy adolescents were found adequate for developing a normative database. Six of the 7 newly developed parameters had adequate SEM.